

Listing of Edits
To The
Guidelines for Energy Efficient Construction
For
The City of Burlington
To Create The New
***2001 Vermont Guidelines for Energy Efficient
Commercial Construction***
Dated OCTOBER, 2001

ISSUED: 9/23/01
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The following is a list of edits to the Burlington Guidelines to create the 2001 Vermont Guidelines. A majority of these edits are due to non-technical differences. Some corrections to errors in the Burlington Guidelines are made. Technical changes and corrections have been identified with “**” indicators.

➤ **Cover Sheet:**

Change: Title “Guidelines for Energy Efficient Construction for the City of Burlington, Vermont” to read:

“2001 Vermont Guidelines for Energy Efficient Commercial Construction”

Change: “Burlington” to:

“State of Vermont”

Delete the following lines:

“Adopted November 13, 2000
Effective January 1, 2001”

Add new line to read:

“October, 2001”

➤ **Page i- Table of Contents:**

Change header on all pages of this document to read:

“2001 VERMONT GUIDELINES FOR ENERGY EFFICIENT COMMERCIAL CONSTRUCTION
AMENDMENTS TO INTERNATIONAL ENERGY CONSERVATION CODE 2000 (IECC 2000)”

Delete the following three lines Under Chapter 7: Building Design for all Commercial Buildings:

“Revise ASHRAE 90.1 Envelope Requirement.....10
Revise ASHRAE 90.1-1999 Section 11.1.5 Paragraph (A) as follows....10
Add ASHRAE 90.1-1999, Section 10.3 Transformer Req. as follows.....10”

Change last line; Appendix A:

From: "Burlington"

to: "State of Vermont"

➤ **Page 1 – Introduction:**

Delete 1st paragraph in its entirety: "Article VI Energy Conservation... January 1, 2001".
Replace with new paragraph as follows:

"The Federal Energy Policy Act of 1992 (EPACT) directed states to adopt a statewide Commercial Building Energy Standard (CBES) based on ASHRAE/IESNA Standard 90.1-1989, Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings. The Vermont Department of Public Service established the Commercial Building Energy Standards Working Group (CBES) in 1999 to develop a statewide commercial building energy code for Vermont. These Guidelines are the result of the CBES Working Group's ongoing effort to establish consistent, coordinated statewide minimum commercial building energy standards for Vermont. These Guidelines are fundamentally consistent with those adopted by the City of Burlington in November 2000 and they are designed to serve as a statewide commercial building energy code. The Department of Public Service, the CBES Working Group and the new State-Wide Energy Efficiency Utility support various jurisdictions and organizations in adopting the Commercial Guidelines and provide technical support and training throughout the state.

The CBES development and implementation project is funded in part through a grant from the U.S. Department of Energy. "

Delete the second paragraph in its entirety:

"These Guidelines, adopted by the Burlington...January 1, 2001".

Change wording of third paragraph:

From: "This revision of the Guidelines adopts a nationally recognized standard, the 2000 International Energy Conservation Code (IECC) as the model energy code for the City of Burlington. This referenced standard is amended to suit the Burlington climate and special needs. Details of these amendments are provided in this document."

To: **“These Guidelines adopt a national recognized standard, the 2000 International Energy Conservation Code (IECC) as the model energy code for the State of Vermont. This referenced standard is amended to suit Vermont’s climate and special needs. Details of these amendments are provided in this document.”**

Delete the following parts of the fourth paragraph:

“As described in Burlington Ordinance Article VI, the IECC and as amended herein.” And “All construction classified...regardless of size and scope.”

Paragraph should read as follows:

“The intent of the Guidelines is to establish minimum energy use and application criteria. The Guidelines apply to all commercial construction as defined in IECC as amended herein. “

Delete the words in fifth paragraph:

“and RBES”

Change in sixth paragraph:

From: “IECC”

To: **“2000”**

Change in seventh paragraph:

From: “Burlington”

To: **“Vermont”**

Change first bulleted line:

From: Burlington, Department of Public Works (DPW)

To: **“Vermont Department of Public Service (DPS)”**

Change fifth bulleted line:

From: “...Burlington...”

To: “Vermont”

➤ **Page 2 – For Assistance**

Revise Assistance paragraph to read:

“For assistance with the commercial construction requirements of the 2001 Guidelines please call the Vermont Department of Public Service at 1-800-642-3281 (in-state) or 1-802-828-2811

For the Burlington Electric Department please call 1-802-865-7342.

For Vermont Gas please call 1-802-863- 4511

For Efficiency Vermont please call 1-888-921-5990”

➤ **Page 3 – Chapter 1: Administration and Enforcement**

Change 101.1 Title to read:

“This code shall be known as the 2001 Vermont Guidelines for Energy Efficient Commercial Construction ~~International Energy Conservation Code~~ of the State of Vermont [NAME OF JURISDICTION] and shall be cited as such. It is referred to herein as “this code”.”

Delete in paragraph 101.2 Intent, fourth line, the words:

“...residential and...”

Add the following new paragraph after 101.2 paragraph:

“Revise Section 101.3 Compliance

101.3 Compliance. Compliance with this code shall be determined in accordance with Sections 101.3.1 and ~~101.3.2~~. “

Delete “Replace Section 101.3.1 Residential Building Compliance” and its following paragraph and replace with:

“Delete Section 101.3.1: Residential Building Compliance:

Note: all residential buildings of Type A-1 and/or Type A-2 (detached one and two family dwellings and mutlti-family dwellings of 3 stories or less in height) shall comply with Sec. 21 V.S.A. § 266, the Residential Building Energy Standards (RBES).”

Change the abbreviation at end paragraph 101.3.2:

From: “DPW”

To: “**Vermont Department of Public Service**”

Add the following new paragraph after 101.3.2:

“Revise Section 101.4: Scope

101.4 Scope. This code establishes minimum prescriptive and performance-related regulations for the design of energy-efficient buildings and structures or portions thereof that provide facilities or shelter for public assembly, educational, business, mercantile, institutional, storage and multi-family residential occupancies greater than 3 stories, as well as those portions of factory and industrial occupancies designed primarily for human occupancy. This code thereby addresses the design of energy-efficient building envelopes and the selection and installation of energy-efficient mechanical, service water-heating, electrical distribution and illumination systems and equipment for the effective use of energy in these buildings and structures.”

➤ **Page 4 – Chapter 1: Administration and Enforcement, cont.**

Delete the following sentence in “101.4.2 Applicability”:

“The provisions of this code shall apply to all construction for which permit applications are submitted to the City of Burlington, Department of Planning and Zoning, Department of Public Works or any applicable City of Burlington office on or after January 1, 2001.”

➤ **** Page 6 – 104 Construction Documents**

Delete entire section 104 and replace with new as follows:

104 – ~~CONSTRUCTION~~ COMPLIANCE DOCUMENTS

104.1 Plans and Specifications: A set of construction documents including plans and specifications shall be submitted to the code official. All building envelope, mechanical, lighting, and electric power distribution system plans and specifications shall contain sufficient information to identify and verify all of the building envelope assembly with thermal and solar ratings; all mechanical system components and arrangements; all mechanical equipment capacities with efficiency ratings, including all motors; all lighting systems arrangements; all lighting ratings; all lighting and mechanical systems sequence(s) of operation.

Exception: The code official is authorized to waive the submission of specific compliance documents for energy efficiency compliance purposes if it is found that the nature of the work applied for is such that reviewing of documents is not necessary to obtain compliance with this code. This exception typically applies to simple commercial construction projects involving system alterations, replacements or repairs that are not associated with new building construction or substantial renovation projects.

104.1.1 Design: All building envelope, mechanical, lighting, and electric power distribution systems including controls, sequence(s) of operation and supporting documentation shall be designed and specified by a qualified professional as consistent with the professional licensing and registration laws of Vermont and the Vermont Labor & Industry Building & Fire Prevention Code.

104.1.2 Administration: The qualified design professional or other legally recognized professional appointed by the design professional or owner shall be responsible for the review and certification that all submittals and shop drawings conform to the building envelope, mechanical, lighting, and electric power distribution construction documents.

104.1.3 System Operation & Maintenance: Operation and maintenance manuals (O&M's) shall be provided to the building owner by the contractor for all systems impacting energy use.

1. O&M submission as a condition of final acceptance shall be part of the construction documents and construction documents shall include a description of their format and content.
2. The operation manuals shall provide all relevant information needed for day-to-day operation and management of each system so as not to degrade the energy efficiency levels and operation as installed.
3. The maintenance manuals shall describe equipment inventory and support the intended building maintenance program so as not to degrade the equipment performance energy efficiency levels as installed.

104.2 Documentation for Verification and Operations: A summary of the design, construction features and systems shall be provided to the code official and building owner. This summary shall contain sufficient information to completely describe the building systems (building envelope, mechanical systems; service water heating; lighting systems; and electric power distribution systems), including operational features and controls. The information required for each building system shall include:

1. A basic description of the building systems design intent including a listing of the ideas, concepts, limitations and criteria that have been defined by the owner and design team to be important to achieve energy efficiency guidelines (Descriptive Narrative).
2. A listing of the building systems component performance ratings including U-value and R-value ratings and lighting, transformer, motor equipment efficiency ratings and capacities. This may be provided using prepared forms from the Vermont COMcheck Compliance Guideline Manual.
3. A summary of building lighting, heating and cooling (if applied) loads. A summary shall be provided on a system or zone basis indicating relationship of HVAC calculated load to equipment capacity.
4. A description of the sequence of operation of the mechanical and lighting systems and their interaction with other systems, including fire prevention and fire protection systems. A reference to specific sections in the project specifications or drawings containing this description is an acceptable form of compliance.
5. A description of the mechanical and lighting systems testing requirements and the criteria for passing to be used for final systems acceptance. A reference to specific sections in the project specifications or drawings containing this description is an acceptable form of compliance.

Approval by the code official of the design concepts, testing procedures, and acceptance criteria of 104.2, 1 through 5, is not required, but the code official may reject the compliance documents if these sections are incomplete, or if they specify any design elements that violate other requirements of the code.

Exception:

The code official is authorized to waive the submission of specific compliance documents for energy efficiency compliance purposes if it is found that the nature of the work applied for is such that reviewing of documents is not necessary to obtain compliance with this code. This exception typically applies to simple commercial construction projects involving system alterations,

replacements or repairs that are not associated with new building construction or substantial renovation projects.

104.3 Acceptance: All building systems, including envelope mechanical, lighting control, and electric power distribution systems shall be installed in accordance with the construction documents and installation shall be verified and tested in accordance with the applicable standards of the code and construction documents. In addition, the following documents shall be submitted to the code official and owner prior to permanent occupancy.

Exception:

The code official is authorized to waive the submission of specific compliance documents for energy efficiency compliance purposes if it is found that the nature of the work applied for is such that reviewing of documents is not necessary to obtain compliance with this code. This exception typically applies to simple commercial construction projects involving system alterations, replacements or repairs that are not associated with new building construction or substantial renovation projects.

1. Certification from the qualified design professional (s), building owner/developer or authorized representative stating that the building envelope, mechanical, lighting, and electric power distribution systems have been installed in substantial accord with the approved construction documents.
2. Confirmation by the building owner/developer or authorized representative that they have received all building envelope, mechanical, lighting, and electric power distribution system record drawings from the installing contractors and that the qualified design professional or other appointed or legally recognized professional has reviewed their reasonable accuracy.
3. Confirmation by the building owner/developer or authorized representative that they have received all construction documents required in 104.1 & 104.2 including reports, controls documentation, operation manual(s) and maintenance manual(s).
4. Documentation from the design professional or other qualified appointed professional that the mechanical and lighting systems are performing to their sequence of operation as designed. For DDC HVAC controls system, a trend report of the accepted systems shall document compliance to design requirements.

➤ **Page 8 – Chapter 2: Definitions**

** Change fourth paragraph, Add “Greenhouse” to read (and underline sentence):

“GREENHOUSE An enclosed detached or attached accessory structure consisting primarily of light transmitting materials and used exclusively for growing plants. “

Add to line six (Climate Zone...Envelope Criteria) under Chapter 3: Design Conditions the following:

“ - per Appendix “A””

➤ **Page 10 – Chapter 7: Building Design for All Commercial Buildings**

**Add the following information:

**“Table B-21 Errata:
In non-residential column:**

Walls, above grade; metal buildings: U-factor is incorrect. “0.1057” should be “0.057.”

Fenestration; vertical glazing; 10.1-20.0% of wall; SHGC_{all} & SHGC_{north} are reversed. SHGC_{all} should = “0.36” and SHGC_{north} should = “0.46”.

Change transformer paragraph:

From: “All dry type transformers shall comply with Burlington Amendment to IECC 2000, Section 806.3 transformer contained in this document.”

To: “ All dry type transformers shall comply with this code’s amendments, Section 806, transformers contained in this document.”

➤ **Page 11 – Chapter 8: Design by Acceptable Practice for Commercial Buildings**

Add line thru word “and” (between numbers “804, and 805”) on first line of 801.2 Application and

Add “and 806” to this sentence after “805”.

Add the following new paragraph to 801.2 Application, with line thru entire paragraph.

“Exception: Buildings meeting Section 806 provided Sections 802.1.2, 802.3, 803.3.1 or 803.3.1 as applicable, 803.2.2 or 803.3.2 as applicable, 803.2.3 as

~~applicable, 803.2.8 or 803.3.6 as applicable, 803.2.9 or 803.3.7 as applicable, 804, 805.2, 805.3, and 805.5 are each satisfied. “~~

Change under Section 802.1 General the following:

From: “Department of Public Works”

To: “**Vermont Department of Public Service**”

**Change the Chapter number for cost budget method

From: “Chapter 13”

To: “**Chapter 11**”

Change “...Amended,...” on first line of “Delete Table 802.2(34):”

From: “Guidelines for Energy Efficient Construction for the City of Burlington – Building Envelope Requirements”

To: “**...2001 Vermont Guidelines for Energy Efficient Commercial Construction – Building Envelope Requirements. “**

➤ **Page 12 – Chapter 8, cont.**

**Change in paragraph 802.3.3 Dampers integral to the building envelope the following:

In the third line:

From: “ft²”

To: “**ft²**”

** Under Exceptions number (3):

From: “2000 ft² (200m²) in area,”

To: “2000 **ft²** (**200m²**) in area,”

➤ **Page 13 – Section 803**

** Add new amendment:

“Revise Section 803.2.3.1 Temperature Controls: Delete the words “electrical resistance” from last sentence.”

➤ **Page 14 – Section 803.2.1.1 Equipment and System Sizing**

** Delete Section 803.2.1.1 Equipment and System Sizing

➤ ****Page 28 – Chapter 8: Design by Acceptable Practice for Commercial Buildings, cont.**

Underline all text from “Add Section 803.3.7 as follows:” thru to the end of “(c)” in Section 803.3.7.2

**Change letter sequence from “(h)” to “(b)” in section 803.3.7.2 Fume Hoods.

➤ **Page 29 – Service Water Heating**

**Underline entire sentence: “804.1.1 Electrical water heating limitation...input.”

**Delete the following under “Revise Section 805.2”

“Part 1: Revise 805.2”

**After “Renumber Section 805.2.2 to 805.2.3” add this sentence:

“Part 3: Add new text as follows:”

Delete the word “hallways” on line 3 under Exceptions for 805.2.2:

**Change numbers in Bi level switching

From: “805.2.4.2.1” Bi level switching

To: “~~805.2.1.2.1~~ 805.2.2.1”

➤ **Page 30 – Lighting System, cont.**

****Change guest room numbers**

From: “805.2.42.3”

To: “~~805.2.1.2~~ **805.2.2.3**”

➤ **Page 31 – Table 805.5.1**

****Underline the following text:**

“TABLE 805.5.1
Lighting Power Limits for Building Exteriors”

****Revise Section 805.5 exception as follows:**

Exception: Where approved because of historical, **aesthetics**, safety, signage, or emergency considerations

➤ **Page 33 – Table 806.1**

****Underline all wording and numbers in Table 806.1.**

➤ **Page 34 – Table 806.2**

****Underline all wording and numbers in Table 806.2**

➤ **Page 36 – Appendix A**

Delete the word “Burlington”

➤ **Pages 37, 38, 39 & 40– Table 802.2(34)**

Change “Guidelines for Energy Efficient Commercial Construction for the City of Burlington, VT – BUILDING ENVELOPE REQUIREMENTS” to the following on all four pages:

“2001 Vermont Guidelines for Energy Efficient Commercial Construction – BUILDING ENVELOPE REQUIREMENTS”

** Change last line on all four tables under “Metal Buildings”, “Metal Framing”:

From: “R13”

To: **“R19”**

** Change Metal Building Roof Assembly Ratings:
“Metal Building with thermal block”

From: “R38”

To: **“R30”**

➤ **Page 38 – Table 802.2(34) [Continued]**

**Change SHGC column numbers:

From: 0.32

To: **“0.46”**

From: 0.48

To: **“0.55”**